Proxima Junior

User Manual

FCC REGULATORY STATEMENTS

FCC Part 68 Registration

This device complies with FCC Part 68 rules, and the use of this device is subject to the following restrictions:

The FCC has established rules which permit this device to be directly connected to the telephone network. Standardized jacks are used for these connections. This equipment should not be used on party lines or coin phones.

If this device is malfunctioning, it may also be causing harm to the telephone network; this device should be disconnected until the source of the problem can be determined and until repair has been made. If this is not done, the telephone company may temporarily disconnect service.

The telephone company may make changes in it's facilities, equipment, operation and procedures; if such changes affect the compatibility or use of this device, the telephone company is required to give adequate notice of the situation with the FCC.

If the telephone company requests information on what equipment is connected to their lines, inform them of:

a. The telephone number to which this unit is connected.

b. The Ringer Equivalence Number (REN).

c. The USOC jack required.

d. The FCC Registration number.

Items (b) and (d) are indicated on the label. The Ringer Equivalence Number (REN) is used to determine how many devices can be connected to your telephone line. In most areas, the sum of the REN's of all the devices on any one line should not exceed 5.0. If too many devices are attached, they may not ring properly.

FCC Part 15 Registration

This device complies with Part 15 of FCC rules. Operation is subject to the following two conditions:

1. This device may not cause harmful interface, and

2. This device must accept any interface received including interface that may cause undesired operation.

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy, and if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

(1) Reorient or relocate the receiving antenna.

(2) Increase the distance between the equipment and receiver.

(3) Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.

(4) Consult an experienced radio/TV technician for help.

CTR 21 pan-European Certification

This equipment has been approved in accordance with Council Decision 98/482/EC for pan-European single terminal connection to the public switched telephone network (PSTN). However, due to differences between the individual PSTNs provided in different countries, the approval does not, of itself, give an unconditional assurance of successful operation

on every PSTN network termination point. In the event of problems, you should contact your equipment supplier in the first instance.

This device is designed to work with the notified networks in all EC member states. Nevertheless, some of the network services in invidual countries might not be supported, but they will not affect the normal data and fax applications. For example, the metering charge service in Germany. Besides you may encounter difficulty of using PULSE dialing function in some of the countries, such as Nordic countries. This kind of network compatibility is dependent on the physical and software settings of this device. If the users are desired to use this device on those networks, they should contact the vendor or supplier first.

INTRODUCTION

The Proxima Junior 56K is Bell, ITU-T (formerly CCITT) compliant and Hayes AT command compatible, so that it can be used worldwide with today's popular communication software programs. You will be able to send and receive faxes to/from any Group 3 compatible fax machine. Using standard phone lines, the data communication functions of the Proxima Junior will enable you to successfully hook up to the Internet, transmit E-mail, send and receive information and communicate with other PCs, Bulletin Board Services (BBS) or computer networks such as Compuserve.

Specifications

Data:

K56flex, V.90, V.34bis, V.34, V.32bis, V.32, V.22bis, V.22, and V.21, Bell 212A and Bell 103

Fax:

V.17, V.29, V.27ter, and V.21 channel 2 Group 3 send and receive facsimile

Error Correction:

V.42 and MNP 2-4

Data Compression:

V.42bis and MNP 5

Communication software compatible commands:

Hayes compatible enhanced "AT" command set

Fax Service Class 1 commands

Built-in DTE interface:

DTE speed up to 115,200 bps

16C550 UART interface

System Requirements

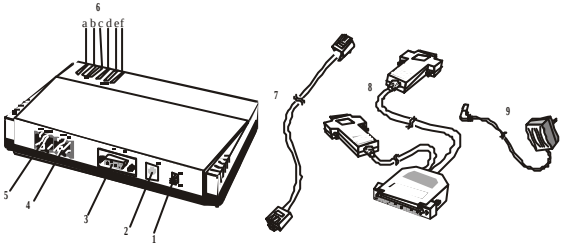
A telephone line with RJ-11 jack.

A free COM port.

A CD-ROM drive.

Windows 95, 98, 2000, Millennium or Windows NT pre-installed.

Parts Names



1. Power Switch
2. AC IN Connector
3. RS232 Connector
4. RJ11 Line Port
5. RJ11 Phone Port
6. LEDs: Six LEDs on
   PW (GREEN, ON)
   OH (GREEN, ON)
   CD (GREEN, ON)
   RD (GREEN, BLINK)
   SD (GREEN, BLINK)

TR (GREEN, ON)

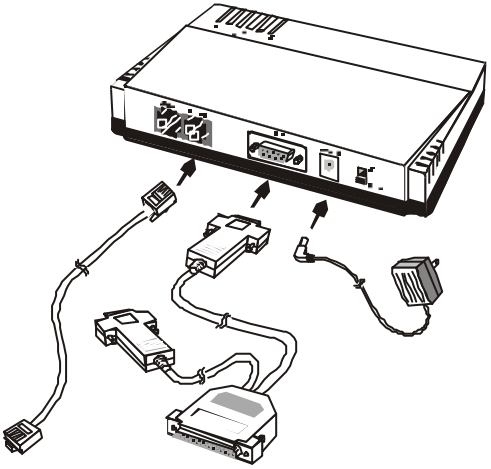
7. Telephone line (the telephone line included may look different from the illustration depending on the region you reside, however, the function is the same.)
8. RS232 cable
9. AC adapter

HARDWARE INSTALLATION

To install the Proxima Junior perform the following steps:

1. Turn off your computer. Make sure the power switch of your Proxima Junior is also set to off.

2. Connect the RS-232 cable to your Proxima Junior with one end to the **RS-232** port on the rear panel of the Proxima Junior and the other end to the COM port of your computer.



3. Connect the provided power adapter to the **AC IN** port and the other end into a wall outlet.

4. Power on your computer and turn the Power Switch ON.

5. Connect the telephone line to the RJ-11 **Line** port, connect the other end of the line into a telephone jack in your wall. If you want to use

the telephone concurrently, connect telephone line to the port labeled **Phone** with another end of the connected to your telephone set.

Note: Use only the power adapter provided with this unit or refer to the rear panel for the correct power adapter. Using any incorrect power adapters will cause permanent and unpredictable damage to this Proxima Junior.

SOFTWARE INSTALLATION

Installation for Windows 95/98

1. Be sure the Proxima Junior is well connected to your computer. Turn on your computer and start Windows.

2. Windows will automatically detect the new hardware device. Click **Next**.

3. Load the Proxima Junior CD-ROM into your computer. When Windows prompts you **What do you want Windows to do**? Select **Search for the best driver for your device. (Recommended).** Click **Next**.

4. Follow the on-screen instructions to proceed. The installation program will proceed automatically.

5. When Windows finishes copying all the necessary files to your computer, Windows will prompt you to complete the installation, click **Finish**.

Installation for Windows 2000

1. Be sure the Proxima Junior is well connected to your computer. Turn on your system and start Windows 2000.

2. Go to **Start→ Settings→ Control Panel→ System→ Hardware→ Device Manager.**

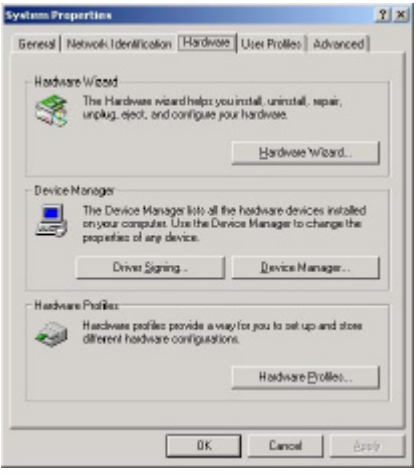
3. **Modem** icon should be found if Windows 2000 detects the modem. If not, go to **Start→ Settings→ Control Panel→ Phone and Modem Options.**

4. Click the **Modem** tab and press the **Add** button to add it in.

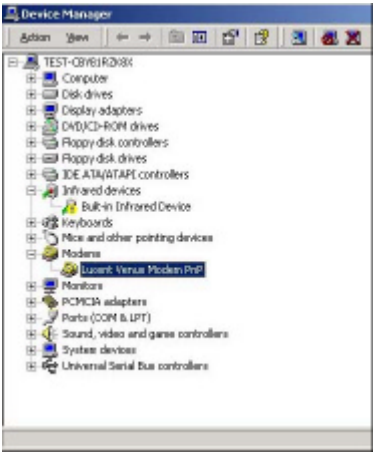
5. Click **Next** to set up the modem.

6. Click **Finish.**

7. Go back to your desktop, and click **Start→ Settings→ Control Panel→ System→ Hardware→ Device Manager.**


System Properties
General
Network Identification
Hardware
User Profiles
Advanced
Hardware Wizard
The Hardware wizard helps you install, uninstall, repair, unplug, eject, and configure your hardware.
Hardware Wizard...
Device Manager
The Device Manager lists all the hardware devices installed on your computer. Use the Device Manager to change the properties of any device.
Driver Signing...
Device Manager...
Hardware Profiles
Hardware profiles provide a way for you to set up and store different hardware configurations.
Hardware Profiles...
OK
Cancel
Apply

8. Click **Modems** to expand. Right-click **Lucent Venus Modem PnP** (processor on board) and select **Properties.**

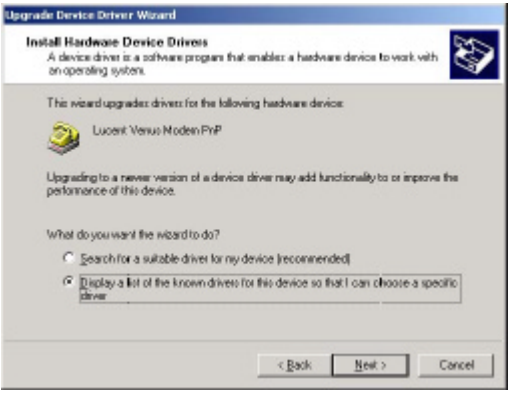


9. Click the **Driver** tab and press the **Update Driver** button.

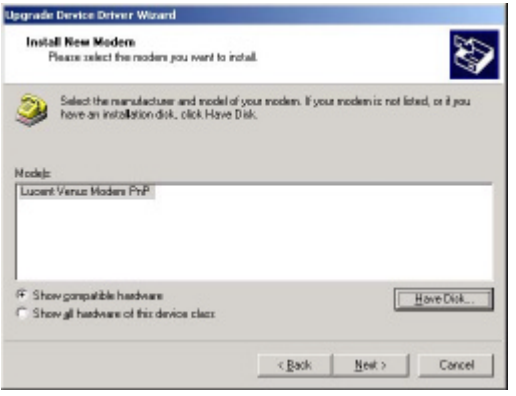
Lucent Venus Modem PnP Properties
General
Modem
Diagnostics
Advanced
Driver
Lucent Venus Modem PnP
Driver Provider: Microsoft
Driver Date: 10/13/1998
Driver Version: 5.0.2167.1
Digital Signer: Microsoft Windows 2000 Publisher
To view details about the driver files loaded for this device, click Driver Details. To uninstall the driver files for this device, click Uninstall. To update the driver files for this device, click Update Driver.
Driver Details...
Uninstall
Update Driver...
OK
Cancel

10. When the **Upgrade Device Driver Wizard** window appears, click **Next.**

11. Select **Display a list of the known drivers for this device so that I can choose a specific driver** and click **Next.**

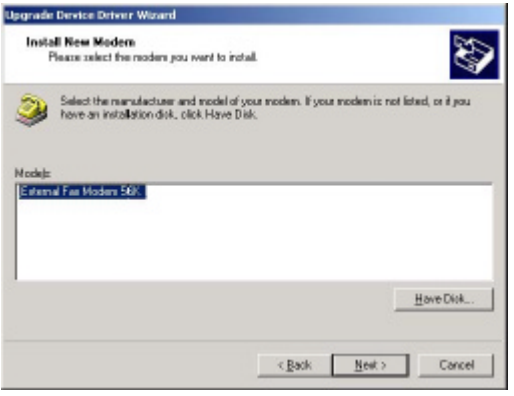

Upgrade Device Driver Wizard
Install Hardware Device Drivers
A device driver is a software program that enables a hardware device to work with an operating system.
This wizard upgrades drivers for the following hardware device:
Lucent Venus Modem PnP
Upgrading to a newer version of a device driver may add functionality to or improve the performance of this device.
What do you want the wizard to do?
Search for a suitable driver for my device (recommended)
Display a list of the known drivers for this device so that I can choose a specific driver
< Back
Next >
Cancel

12. Highlight **Lucent Venus Modem PnP** and click the **Have Disk** button.

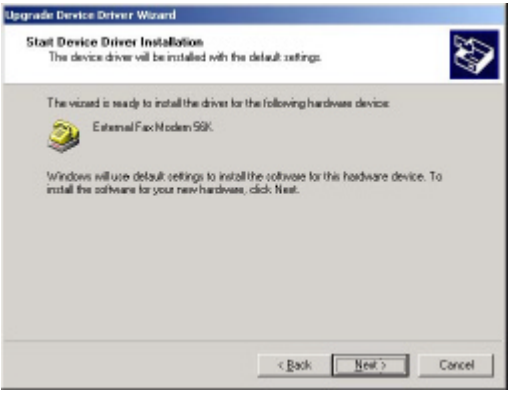

Upgrade Device Driver Wizard
Install New Modem
Please select the modem you want to install.
Select the manufacturer and model of your modem. If your modem is not listed, or if you have an installation disk, click Have Disk.
Models:
Lucent Venus Modem PnP
Show compatible hardware
Show all hardware of this device class
Have Disk...
< Back
Next >
Cancel

13. Load the CD-ROM which contains the device driver of the Proxima Junior and type the drive path. Click **OK.**

14. Click **Next.**


Upgrade Device Driver Wizard
Install New Modem
Please select the modem you want to install.
Select the manufacturer and model of your modem. If your modem is not listed, or if you have an installation disk, click Have Disk.
Models:
External Fax Modem 56K
Have Disk...
< Back
Next >
Cancel

15. Click **Next.**


Upgrade Device Driver Wizard
Start Device Driver Installation
The device driver will be installed with the default settings.
The wizard is ready to install the driver for the following hardware device:
External Fax Modem 56K
Windows will use default settings to install the software for this hardware device. To install the software for your new hardware, click Next.
< Back
Next >
Cancel

16. Click **Yes.**

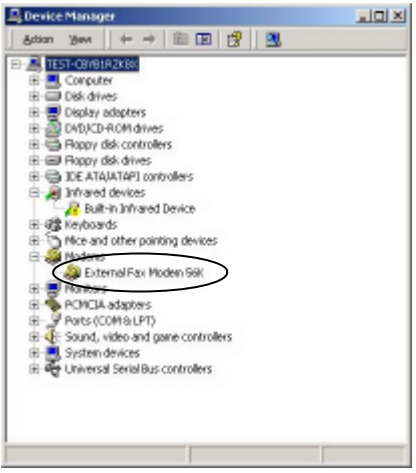
Digital Signature Not Found
The Microsoft digital signature affirms that software has been tested with Windows and that the software has not been altered since it was tested.
The software you are about to install does not contain a Microsoft digital signature. Therefore, there is no guarantee that this software works correctly with Windows.
External Fax Modem 56K
If you want to search for Microsoft digitally signed software, visit the Windows Update Web site at http://windowsupdate.microsoft.com to see if one is available.
Do you want to continue the installation?
Yes
No
More Info

17. Click **Finish**.

Upgrade Device Driver Wizard
Completing the Upgrade Device Driver Wizard
External Fax Modem 56K
Windows has finished installing the software for this device.
To close this wizard, click Finish.
< Back
Finish
Cancel

18. When back to the **Proxima Junior Properties** window, click **Close** to complete the driver updating.

19. To verify if the device is well installed in your system and enabled, go to the **Device Manager** window. The **Proxima Junior** should be found on the list. If not, contact your dealer for technical support.



Installation for Windows Millennium

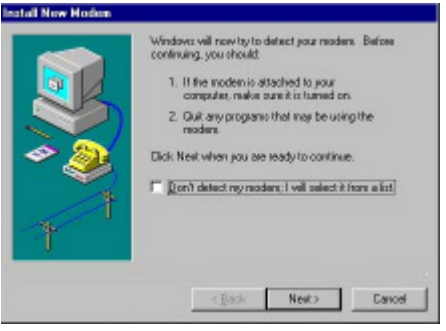
1. Be sure the Proxima Junior is well connected to your computer. Turn on your system and start Windows Millennium.

2. Go to **Start→ Settings→ Control Panel→ System→ Device Manager.**

3. **Modem** icon should be found if Windows Millennium detects the modem. If not, go to **Start→ Settings→ Control Panel→ Modems.**

4. Click the **General** tab and press the **Add** button to add it in.

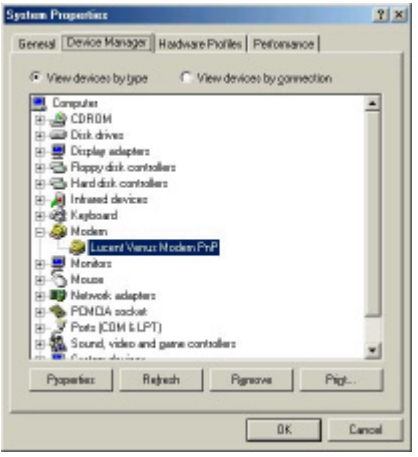
5. Click **Next** to set up the modem.


Install New Modem
Windows will now try to detect your modem. Before continuing, you should:
1. If the modem is attached to your computer, make sure it is turned on.
2. Quit any programs that may be using the modem.
Click Next when you are ready to continue.
Don't detect my modem; I will select it from a list.
< Back
Next >
Cancel

6. Click **Finish.**

7. Go back to your desktop, and click **Start→ Settings→ Control Panel→ System→ Device Manager.**

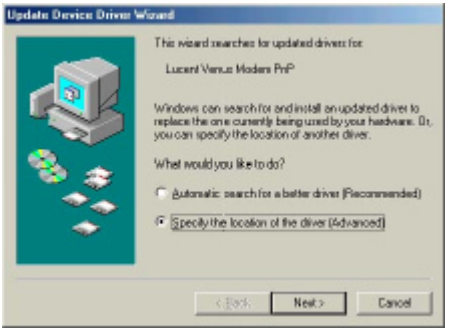
8. Click **Modem** to expand. Highlight **Lucent Venus Modem PnP** and select **Properties**.



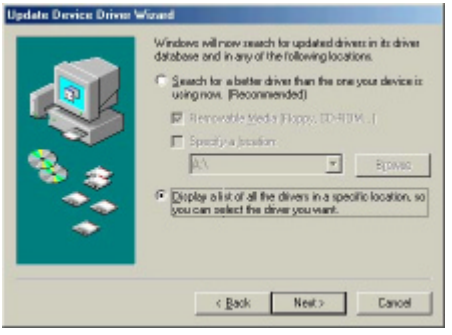
9. Click the **Driver** tab and press the **Update Driver** button.

Lucent Venus Modem PnP Properties
General
Modem
Connection
Driver
Lucent Venus Modem PnP
Driver Provider: Microsoft
Driver Date: 06/08/2000
Digital Signer: Microsoft Consumer Windows Publisher
To view details about the driver files loaded for this device, click Driver File Details. To update the driver files for this device, click Update Driver.
Driver File Details...
Update Driver...
OK
Cancel

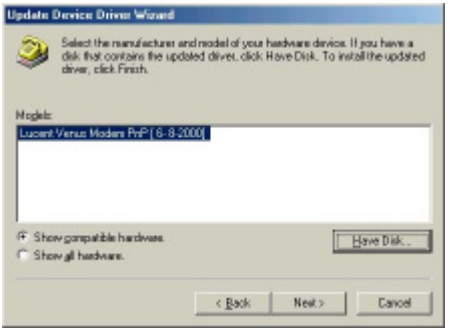
10. Select **Specify the location of the driver (Advanced)** and click **Next.**


Update Device Driver Wizard
This wizard searches for updated drivers for:
Lucent Venus Modem PnP
Windows can search for and install an updated driver to replace the one currently being used by your hardware. Or, you can specify the location of another driver.
What would you like to do?
Automatic search for a better driver (Recommended)
Specify the location of the driver (Advanced)
< Back
Next >
Cancel

11. Select **Display a list of all the drivers in a specific location, so you can select the driver you want** and click **Next.**

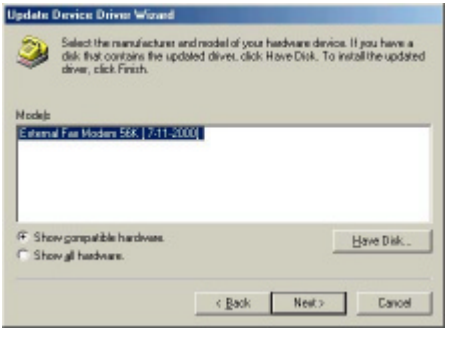

Update Device Driver Wizard
Windows will now search for updated drivers in its driver database and in any of the following locations.
Search for a better driver than the one your device is using now. (Recommended)
Removable Media (Floppy, CD-ROM...)
Specify a location:
A:\
Browse
Display a list of all the drivers in a specific location, so you can select the driver you want.
< Back
Next >
Cancel

12. Highlight **Lucent Venus Modem PnP** and press the **Have Disk** button.

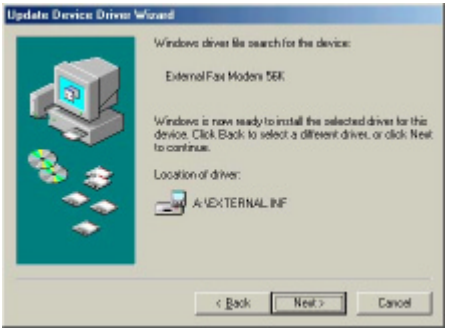

Update Device Driver Wizard
Select the manufacturer and model of your hardware device. If you have a disk that contains the updated driver, click Have Disk. To install the updated driver, click Finish.
Models:
Lucent Venus Modem PnP (6-8-2000)
Show compatible hardware
Show all hardware
Have Disk...
< Back
Next >
Cancel

13. Load the CD-ROM with the device driver and type the drive path. Click **OK.**

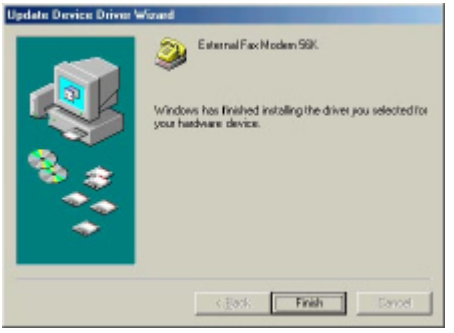
14. Click **Next.**


Update Device Driver Wizard
Select the manufacturer and model of your hardware device. If you have a disk that contains the updated driver, click Have Disk. To install the updated driver, click Finish.
Models:
External Fax Modem 56K (7-11-2000)
Show compatible hardware
Show all hardware
Have Disk...
< Back
Next >
Cancel

15. Click **Next.**

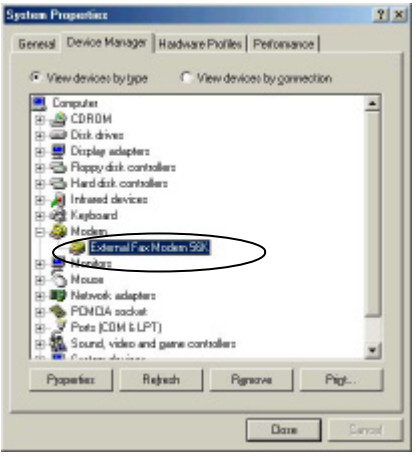

Update Device Driver Wizard
Windows driver file search for the device:
External Fax Modem 56K
Windows is now ready to install the selected driver for this device. Click Back to select a different driver, or click Next to continue.
Location of driver:
A:\EXTERNAL.INF
< Back
Next >
Cancel

16. Click **Finish.**


Update Device Driver Wizard
External Fax Modem 56K
Windows has finished installing the driver you selected for your hardware device.
< Back
Finish
Cancel

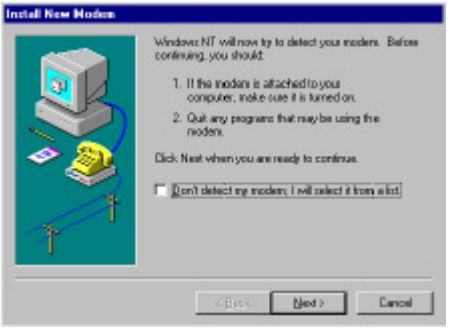
17. When back to the **Proxima Junior Properties** window, click **Close** to complete the driver updating.

18. To verify if the device is well installed in your system and enabled, go to the **Device Manager** window. The **Proxima Junior** should be found on the list. If not, contact your dealer or Bausch Datacom for technical support.

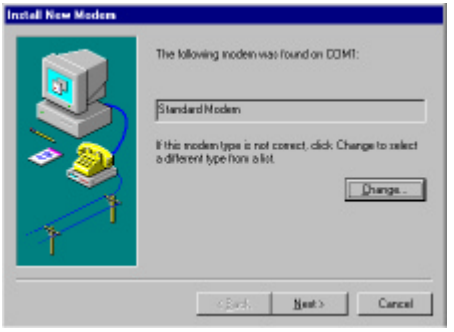


Installation for Windows NT

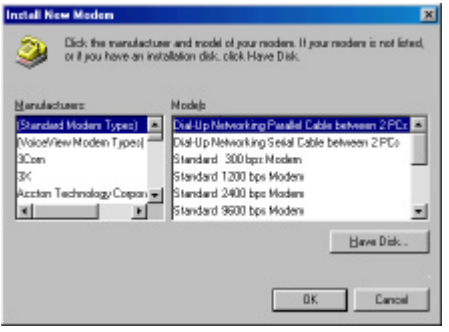
1. Go to **My Computer → Control Panel**. Double-click **Modem**. Click the **Add…** button. Click **Next**.


Install New Modem
Windows NT will now try to detect your modem. Before continuing, you should:
1. If the modem is attached to your computer, make sure it is turned on.
2. Quit any programs that may be using the modem.
Click Next when you are ready to continue.
Don't detect my modem; I will select it from a list.
< Back
Next >
Cancel

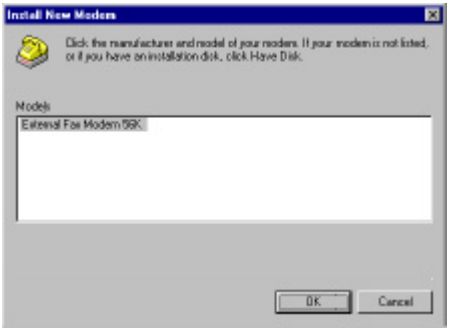
2. Follow the on-screen instruction to proceed. When the following dialog box appears, select **Change...**


Install New Modem
The following modem was found on COM1:
Standard Modem
If this modem type is not correct, click Change to select a different type from a list.
Change...
< Back
Next >
Cancel

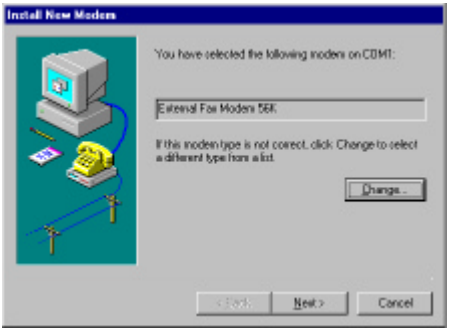
3. Select **Have Disk…**from the "**Install New Modem**" window. And make sure the Proxima Junior CD-ROM is loaded into your computer.


Install New Modem
Click the manufacturer and model of your modem. If your modem is not listed, or if you have an installation disk, click Have Disk.
Manufacturers:
(Standard Modem Types)
(Voice/View Modem Types)
3Com
3K
Accton Technology Corpor
Models:
Dial-Up Networking Parallel Cable between 2 PCs
Dial-Up Networking Serial Cable between 2 PCs
Standard 300 bps Modem
Standard 1200 bps Modem
Standard 2400 bps Modem
Standard 9600 bps Modem
Have Disk...
OK
Cancel

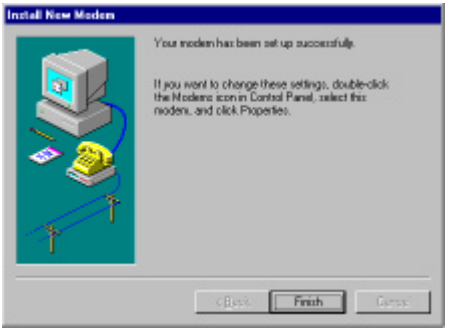
4. Direct to your CD-ROM drive and select **BAUSCH.INF**. Follow the on-screen instruction to proceed.


Install New Modem
Click the manufacturer and model of your modem. If your modem is not listed, or if you have an installation disk, click Have Disk.
Models
External Fax Modem 56K
OK
Cancel

5. Press **Next** to continue.


Install New Modem
You have selected the following modem on COM1:
External Fax Modem 56K
If this modem type is not correct, click Change to select a different type from a list.
Change...
< Back
Next >
Cancel

6. Click **Finish** to complete the installation.


Install New Modem
Your modem has been set up successfully.
If you want to change these settings, double-click the Modems icon in Control Panel, select this modem, and click Properties.
< Back
Finish
Cancel

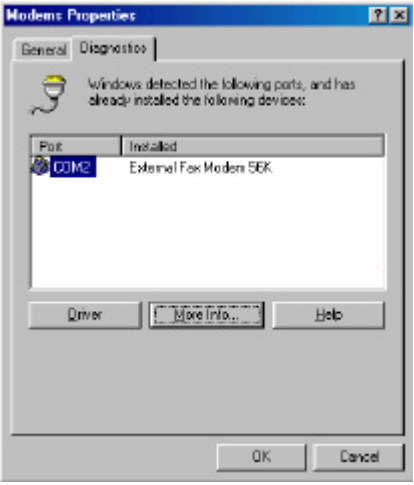
Setup Diagnostics (for Windows 95/98)

You can perform the following steps to check if your Proxima Junior is well installed.

1. Go to the **Start** menu. Point to **Settings**. Click **Control Panel**. Double-click **Modems**.

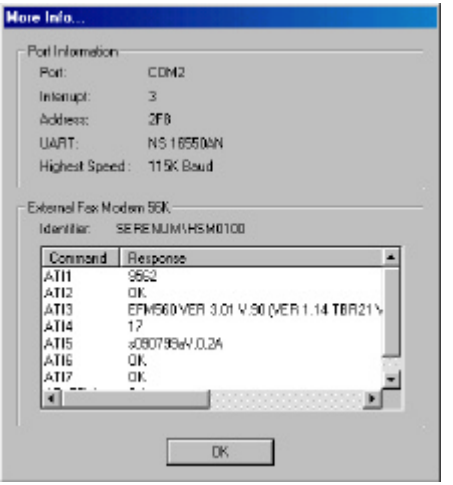
2. When the **Modems Properties** dialog box appears, select the **Diagnostics** tab.

3. Select the COM port whichever is installed **Proxima Junior** and click **OK**.



4. If the screen does not at all include the Proxima Junior, stop the diagnostics procedures, and skip to the following section titled "**Uninstall**".

5. For Windows 95/98, if the information shown below can be found on the screen, it means the modem is well installed. Click **OK** to exit.


More Info...
Port Information
Port: COM2
Interrupt: 3
Address: 2F8
UART: NS 16550AN
Highest Speed: 115K Baud
External Fax Modem 56K
Identifier: SERENUM\HSM0100
Command
Response
ATI1 9562
ATI2 OK
ATI3 EFM56D VER 3.01 V.90 (VER 1.14 TBR21
ATI4 17
ATI5 s080799aV.0.2A
ATI6 OK
ATI7 OK
OK

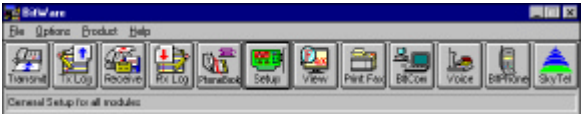
APPLICATIONS

To use the Proxima Junior for data communication, for example, to send/receive faxes or to get onto the Internet, you may use any application software that you are familiar with. Or you may also choose to use the bundled application software that comes with the Proxima Junior. The following are examples for sending faxes and going to the Internet.

Using BitWare to Send a Fax

1. Be sure BitWare has been successfully installed in your system.

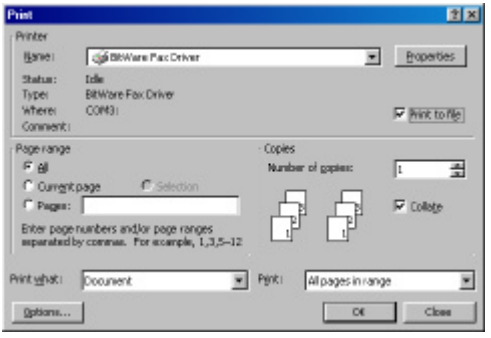
2. Go to the **Cheyenne BitWare** program. Double-click the Cheyenne BitWare icon. When the opening screen appears, click the **Setup** icon.



3. Select Modem when the Setup dialog box appears.

4. When the Modem Setup dialog box appears, press Auto Detect and click OK to continue. The BitWare Fax Driver is then successfully installed. Click **Close** to finish the setup.

5. Print the file you want to fax to file and set the printer to BitWare Fax Driver as shown below.



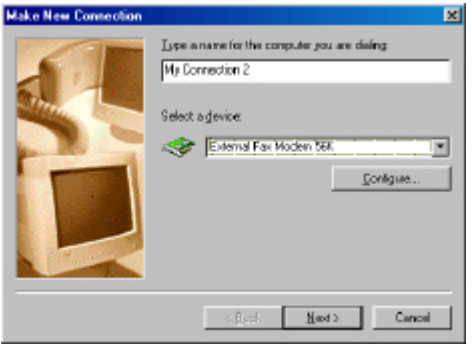
6. Click **Start** when the following dialog box appears. The fax will then be sent.

Internet Access

1. Go to **My Computer**.

2. Select **Dial-Up Networking.**

3. Double-click **Make a New Connection**, a dialogue box appears for you to name the new connection and select the device. Name the new connection appropriately and click **Next**.



4. Enter the area code and phone number of your Internet Service Provider (ISP). Follow the on-screen instruction to proceed.

5. When finished, from the **Dial-Up Networking** window right-click your newly created connection. Select **Properties**. On the **Server Types** tab, enter the proper selections as shown below and click **OK** to finish the settings.

6. You are now ready to connect to the Internet.

TROUBLE SHOOTING

This chapter provides information on the most commom problems, the possible causes, and the solutions.

The modem does not respond to AT commands.

- *Conflict of COMx: port setting with another device.*

  Change the COMx: port of the Proxima Junior to a free port. Be sure to update your software COMx: port setting as well.

The modem does not execute the command line.

- *Make sure you are typing 'AT' at the beginning of command line.*
- *Make sure the modem is not in Data Mode. type* **+++** *if necessary.*
- *Make sure your software is set to the same COMx: port as the modem is.*

The modem does not give a response after an AT command was executed.

- *The echo and/or responses may be turned off by the ATE0Q1 commands.*

  Use AT&V to check that.

  Use ATE1Q0 then Enter to change them back.
- *Make sure the modem is in Command Mode rather than in Data Mode when you type the AT command.*

The modem gives an 'ERROR' response after an AT command was executed.

- *Make sure you did not type an invalid command.*

- *Make sure your command line is 40 characters or less in length.*

The modem goes off-hook and disables the telephone line.

- *The modem may be set to auto-answer mode when it rings.*

  Type ATS0=0, then Enter at the command line to disable the auto-answer mode.

The modem does not auto-answer the phone.

- *Make sure the software is configured to auto-answer the phone.*

  Type ATS0=n then press Enter. The n stands for the number of rings the modem will answer on.

The software does not control the modem properly or can not detect the modem.

- *Make sure the software has been set up correctly. Check the initialization and dial strings.*
- *Some TSRs (programs that stay in memory after they are loaded) may conflict with the communications software.*

  Restart your computer without loading any TSRs.

The characters on the screen are doubled.

- *Both the modem and the software have the echo feature turned on at the same time.*

  Turn off the software echo feature off.
- *The remote modem is echoing your typed characters.*

Type ATE1 then Enter at the command line. Then turn off the software echo feature.

No text appears on the screen when in data mode.

- The remote modem is not echoing your typed characters.

  Type ATE0 then press Enter at the command line. Then turn the software echo feature on.

- *Your software may not be set to use Full Duplex or the remote modem may not be set to use Full Duplex either.*

- *C:The remote modem may be waiting for you to type a command before it will reply with text.*

No text appears on the screen when in command mode.

If you can't see the characters you are typing, then type ATE1 then press Enter.

The modem does not dial a phone number after you execute the AT dial command.

- *If you are using touch tone dialing on a phone line that requires pulses, then it may not work.*

  Use ATDT in place of ATDP.

When your communications software tells the modem to dial, it does not.

- Make sure the software dialing prefix is ATDT.

- *Make sure the software and modem are set to the same COMx: port.*

- *The modem may not have hung up the phone line since the last call.*

- *Change to command mode and type ATH then press Enter.*

When dialing another modem, you receive a 'CONNECT' response, but nothing else.

- *The remote modem may be waiting for you to type a command. Or try to press Enter for logging on to the remote site.*

The modem speaker does not make any sound when you're connecting to another modem.

The software may have the speaker disabled.

Change the setting in your software or use the ATMn command to turn the speaker on.

The modem disconnects (looses the connection) in the middle of use.

- *The remote modem may have locked up.*
- *The telephone switch may have disconnected your call.*
- *Your software may have turned off the DTR signal.*

The modem does not connect with another modem.

- *There may be a problem with the remote modem if you do not hear the high pitched tone from the remote modem.*

Occasionally, the modem gives a burst of errors.

- *The telephone line may be noisy or bad.*

  Hang up the call and try to connect again for getting a better telephone line.

- *If there are other telephones on the same line that your modem is using, someone may have picked up a telephone on that extension.*

- *Your telephone line may have the call waiting feature.*

  *Try adding '*70,' to your ATDT dialing command line. If it doesn't help, ask your telephone company how to disable it temporarily.*

The modem gets errors in transmitted data randomly.

Try to use V.42 or MNP1-4 if possible.

Connect the modems at a slower baud rate.

After you download a file, it was not stored on your disk drive.

- *If both modems are using MNP or V.42 protocol, then the flow control may not be enabled.*

  Configure your software to use RTS/CTS flow control. That will cause your computer to pause long enough for the file to be stored to disk.

The text on the screen is not legible.

- *Your software settings may not match the settings on the remote site.*

  Make sure your data bits, stop bits, and parity settings match the settings that the other computer is using. The two most common settings are: 8 data bits, None parity, and 1 stop bit (8,N,1) or 7 data bits, Even parity, and 1 stop bit (7,E,1).

- *If the telephone line is very noisy, you may see corrupted data on your screen.*

- *Due to poor telephone line conditions, the modem may have fallen back to a slower communication speed. You may need to change the baud rate setting in your software to match this slower speed. To return the modem to the higher speed, disconnect the link and re-establish again.*

When using V.42bis or MNP5, some features are disabled.

- *You may be using a non-streaming protocol, like Xmodem or Ymodem to transfer files. Those are fine unless you are using V.42bis or MNP5*

  When using V.42bis or MNP5, you should use a streaming transfer protocol like Ymodem-G or Zmodem.

  Configure your software to use hardware flow control (RTS/CTS ON).

When the modem is connecting to another modem, it reports a higher connect baud rate that it is really using.

- *The modem defaults to report the modem-to-computer baud rate when it responds with CONNECT.*

  Go to command mode with your communication program (like Telix) and type ATW2, then press Enter. This tells the modem to report the modem-to-modem baud rate instead.

APPENDIX A: AT COMMAND

Basic AT Command Set

Command	Options	Function & Description
A/		Re-execute the last command string
<any key>		Terminate the current connection attempt when entered in handshaking state
All the following commands require an "AT" prefix		
A		Go off-hook and attempt to establish a connection without waiting for a ring
Bn		Line modulation options
	B0	Select V.22 mode for 1200 bps connection
	B1 *	Select Bell 212A for 1200 bps connection
	B2	Select V.23 1200 bps for receiving, 75 bps for transmitting in originate mode; 75 bps for receiving and 1200 bps for transmitting in answer mode
	B3	Select V.23 75 bps for receiving, 1200 bps for transmitting in originate mode; 1200 bps for receiving and 75 bps for transmitting in answer mode
	B15	Select V.21 for 300 bps connection
	B16	Select Bell 103 for 300 bps connection
Dn		Dial command, beginning the dialing sequence. The string "n" (telephone number and modifiers) listed as follows is entered after the "D" command
	L	Re-dial last number. Should be the first character following ATD, ignored otherwise

	P	Pulse dial.
	R	Reverse dial. Originate call in answer mode (go on-line in answer mode)
	S=n	Dial the phone number stored in NVRAM at location "n" (n=0, 1, 2, 3)
	T	DTMF tone dial.
	W	Wait for second dial tone. The modem waits for the second dial tone before processing the dial string
	,	Pause. Cause the modem to pause for a time before processing the next character in the dial string (specified by S8 register)
	!	Hook Flash (for call transfer). Cause the modem to go on-hook for 0.5 second then return to off-hook
	@	Wait for 5 seconds of silence after dialing number
	;	Return to command state after dialing a number without disconnecting the call
En		AT command echo options
	E0	Echo disabled
	E1 *	Echo enabled
Hn		Switch-hook control
	H0 *	Modem goes on-hook
	H1	Modem goes off-hook
Mn		Speaker control
	M0	Speaker always off
	M1 *	Speaker on until carrier present
	M2	Speaker always on
	M3	Speaker off during dialing and on until

		carrier present
Nn		Select negotiate handshake
	N0	When originating or answering, handshake only at the communication rate specified by S37 register and “ATBn” and no fallback
	N1 *	When originating or answering, start handshaking only at the communication standard specified by S37 register and “ATBn” During handshake, fallback to a lower speed may occur.
On		Go on-line
	O0	Return modem to a previously established state (return to data mode).
	O1	Begin a retrain sequence, then return to on-line state.
	O3	Issue a rate re-negotiation, then return to on-line state.
P		Enable pulse dialing
Qn		Result code display options
	Q0 *	Result code enabled
	Q1	Result code disabled
T		Enable tone dialing
Vn		Result code form
	V0	Display result code in numeric form (see also the result code options table)
	V1 *	Display result code in verbose (text) form
Wn		Select extended result code options
	W0	CONNECT result code reports DTE speed. Disable protocol result codes.

		(see also the “Result Code Options Table”)
	W1	CONNECT result code reports DTE speed. Enable protocol result codes.
	W2 *	CONNECT result code reports DCE speed. Enable protocol result codes.
Xn		Select result codes/call progress options
	X0	Display CONNECT or “1” for all speeds. Ignore dial tone and busy tone detection.
	X1	Display connect message and the modem’s data rate, and an indication of the modem’s error correction and data compression. Ignore dial tone and busy tone detection.
	X2	Display connect message and the modem’s data rate, and an indication of the modem’s error correction and data compression. Check dial tone before proceeding dialing, ignore busy tone detection.
	X3	Display connect message and the modem’s data rate, and an indication of the modem’s error correction and data compression. Ignore dial tone before proceeding dialing, check busy tone after making dialing.
	X4 *	Display connect message and the modem’s data rate, and an indication of the modem’s error correction and data compression. Check dial tone and busy tone.
	X5	Same as X4.
	X6	Same as X4.
	X7	Display CONNECT or “1” for all speeds.

		Check dial tone and busy tone.
Zn		Recall stored profile
	Z0	Reset and recall user profile 0. Either Z0 or Z1 restores the same single profile.

* Manufacturer default

Extended "AT&" (Ampersand) Command Set

Command	Options	Function & Description
&Cn		Data carrier detect option
	&C0	State of carrier from remote modem is ignored. DCD circuit is always on
	&C1 *	DCD turns on when the remote modem's carrier signal is detected, and off when the carrier signal is not detected.
&Dn		Data Terminal Ready (DTR) option.
	&D0	DTR ignored
	&D1	Go to command mode on on-to-off DTR transition
	&D2 *	Hang up and go to command mode on on-to-off DTR transition. Auto-answer is disabled if DTR is low
	&D3	Hang up and reset from user profile 0 on the on-to-off DTR transition
&F		Recall factory default setting as active configuration
&Gn		V.22bis guard tone option
	&G0 *	No guard tone
	&G1	550 Hz guard tone

	&G2	1800 Hz guard tone
&Kn		Set local flow control
	&K0	Disable flow control
	&K3 *	Enable bi-directional hardware flow control (CTS/RTS)
	&K4	Enable bi-directional software flow control (XON/XOFF)
&Pn		Pulse dialing make/break ratio selection
	&P0	Make=39%, Break=61%, international version (Default)
		Make=33%, Break=67% for use in 20 pps, Japanese version
	&P1	Make=33%, Break=67%, international version
		Make=33%, Break=67% for use in 10 pps, Japanese version (Default)
&Qn		Async communications mode options
	&Q0	Async mode, buffered (same as "AT\N0")
	&Q5 *	Error control mode, buffered (same as "AT\N3")
	&Q8	MNP error control mode. If an MNP error control protocol is not established, the modem will fallback according to the current setting in S36 register.
	&Q9	V.42 or MNP error control mode. If neither error control protocol is established, the modem will fallback according to the current setting in S36 register.
&Sn		Data Set Ready (DSR) option
	&S0 *	DSR always on
	&S1	DSR on during handshake and on-line, off

		in test mode or idle mode
&Tn		Self-test commands
	&T0	Terminate any test in progress
	&T1	Local analog loopback test
	&T3	Local digital loopback (LDL) test
	&T6	Remote digital loopback test, in normal mode
&V		View active file and stored phone numbers
&W		Store active configuration into the modem's NVRAM
&Zn=x		Store telephone number n=0 to 3 x=<string> see also the dial modifier in "ATDn" command The max. number of digits per string is 40.

* Manufacturer default

Extended "AT\" (Back Slash) Command Set

Command	Options	Function & Description
\Jn		Constant DTE speed option
	\J0 *	DCE and DTE rates are independent
	\J1	Force the DTE interface speed to the DCE connection rate (line speed) after on-line
\Nn		Error control mode options
	\N0	Buffered mode, no error control (flow control is allowed).
	\N1	Direct mode, no error control (no flow

		control is allowed).
	\N2	MNP reliable mode. If MNP 2-4 error control establishment fails, the modem disconnects.
	\N3 *	V.42, MNP or buffer mode. The modem attempts to connect in V.42 mode. If this fails, the modem attempts to connect in MNP mode. If this fails, the modem connects in buffer mode.
	\N4	V.42 or disconnect. The modem attempts to connect in V.42 mode. If this fails, the call will be disconnected.
\Qn		Local flow control options
	\Q0	Disable flow control (same as “AT&K0”)
	\Q1	XON/XOFF software flow control (same as “AT&K4”)
	\Q3 *	RTS/CTS hardware flow control (same as “AT&K3”)
\Tn		Set inactive timer (for buffer mode only)
	n=0 *	Disable inactive timer
	n=1 - 255	Enable inactive timer. Length in minutes
\Vn		Protocol result codes
	\V0	Disable protocol result code appended to DCE speed
	\V1 *	Enable protocol result code appended to DCE speed

* Manufacturer default

Extended “AT%” (Percent) Command Set

Command	Options	Function & Description

%B		View numbers in blacklist. If blacklisting is in effect, this command displays the numbers for which the last call attempted in the past two hours failed. The ERROR result code appears in the countries that do not require blacklisting.
%Cn		Data compression control
	%C0	No data compression
	%C1 *	V.42bis/MNP 5 data compression enabled.

* Manufacturer default

Extended "AT-" (Dash) Command Set

Command	Options	Function & Description
-Cn		Data calling tone options
	-C0 *	Disable data calling tone
	-C1	Enable data calling tone (the freq. is 1,300 Hz with a cadence of 0.5 sec. ON and 2 sec. OFF)
-V90=<n>		command to enable/disable .90 and change downstream rate
	-V90=0	disable V.90
	-V90=1	enable V.90 Auto Rate (default value)
	-V90=X	controls the downstream rate
	-V90?	Shows the current value
	-V90=?	Shows the range [0-21]

- Manufacturer default

Possible Values of V.90

"AT-V90=X"	Downstream Rate

0	V.90 disabled
1	Auto Rate (default)
2	28000 kbit/s
3	29333 kbit/s
4	30666 kbit/s
5	32000 kbit/s
6	33333 kbit/s
7	34666 kbit/s
8	36000 kbit/s
9	37333 kbit/s
10	38666 kbit/s
11	40000 kbit/s
12	41333 kbit/s
13	42666 kbit/s
14	44000 kbit/s
15	45333 kbit/s
16	46666 kbit/s
17	48000 kbit/s
18	49333 kbit/s
19	50666 kbit/s
20	52000 kbit/s
21	53333 kbit/s

APPENDIX B: S-REGISTERS

S-Registers, “ATSn=x”

Register	Dec.	Function & Description	Default
S0=	0 - 255	Set the number of the rings required before the modem automatically answers a call. Set “S0=0” to disable auto-answer mode	000
S1=	0 - 255	Count the incoming rings and store the value to this register. The value of this register is incremented with each ring. If no rings occur over an 8 sec. interval, this register is cleared. User can read but should not change this value	000
S2=	0 - 255	S2 holds the decimal value of the ASCII character used as the escape character. The default value (043) corresponds to an ASCII character “+”. A value of 128 to 255 disables the escape process, i.e., no escape character will be recognized	043
S3=	0 - 127	Hold the decimal value of the Carriage Return <CR> character used as the command line and result code terminator. Pertain to asynchronous operation only	013
S4=	0 - 127	Hold the decimal value of the character recognized as a line feed.The line feed control character is output after the carriage return control character if verbose result code are used.	010
S5=	0 - 32,	Hold the decimal value of the character	008

	127	recognized as a backspace. The modem will not recognize the backspace character if this register is set to a value greater than 32	
S6=		Set the length of time, in seconds, that the modem must wait (minimum 2 seconds even if the value is less than 2) after going off-hook before dialing the first digit of the telephone number	
	2 - 65	For international version	003
S7=		Set the time, in seconds, that the modem must wait before hanging up because carrier is not detected	
	1 - 255	For international version	050
	35 - 59	For Japanese version	050
S8=	0 - 65	Set the time, in seconds, that the modem must pause when the "," dial modifier is encountered in the dial string	002
S10=	1 - 255	Set the length of time, in tenths of a second, that the modem waits before hanging up after a loss of carrier	020
S11=	50 - 150	DTMF duration and inter digit delay. Set the duration and spacing, in mini-seconds, in DTMF touch tine dialing	144
S12=	0 - 255	Define the maximum period, in 2-hundredths of a second, allowed between consecutive asynchronous escape character "+" (plus) for the escape sequence to be considered valid	050
S28=	0 - 255	V.34 modulation en-/disabler 0: disabled 1- 255: enabled	001
S30=	0 - 90	Inactivity timer. Set the length of time, in minutes, that the modem counts when	000

		there is no data flow in or out the DTE serial port. A connection is disengaged when the counter reaches the preset value. Set S30 =0 to disable the inactivity timer. For buffer mode only.	
S37=		Desired DCE speed (line speed)	000
	0	Maximum modem speed	
	2	Attempt 1200/75 bps connection	
	3	Attempt to a 300 bps connection	
	5	Attempt to a 1200 bps connection	
	6	Attempt to a 2400 bps connection	
	7	Attempt to a 4800 bps connection	
	8	Attempt to a 7200 bps connection	
	9	Attempt to a 9600 bps connection	
	10	Attempt to a 12000 bps connection	
	11	Attempt to a 14400 bps connection	
	12	Attempt to a 16800 bps connection	
	13	Attempt to a 19200 bps connection	
	14	Attempt to a 21600 bps connection	
	15	Attempt to a 24000 bps connection	
	16	Attempt to a 26400 bps connection	
	17	Attempt to a 28800 bps connection	
	18	Attempt to a 31200 bps connection	
	19	Attempt to a 33600 bps connection	
S38=		56K Dial Line Rate Options. Set the max. 56K downstream speed that the modem attempts to connect	000

	0	56K disabled	
	1	56K enabled, auto-speed selection, max. modem speed	
	2	32000 bps	
	3	34000 bps	
	4	36000 bps	
	5	38000 bps	
	6	40000 bps	
	7	42000 bps	
	8	44000 bps	
	9	46000 bps	
	10	48000 bps	
	11	50000 bps	
	12	52000 bps	
	13	54000 bps	
	14	56000 bps	
S48=	7, 128	LAPM error control and feature negotiation. S48=7 Negotiation enabled S48=128 Negotiation disabled. Force immediate fallback options specified in S36 S36=0 or 2, and S48=7 LAPM or hang up S36=0 or 2 and S48= 128	

		Don't use S36=1 or 3, and S48=7 LAPM or async S36=1 or 3, and S48=128 Async S36=4 or 6, and S48=7 LAPM, MNP or hang up S36=4 or 6, and S48=128 MNP or hang up S36=5 or 7, and S48=7 LAPM, MNP or async S36=5 or 7, and S48=128 MNP or hang up	
S91=	6 - 15	Transmitting power level adjustment (Japanese version only) Range: -6 dBm to -15 dBm Default: -15 dBm	010